

open the rail control valve (612) and close the fuel shut-off valve (618) prior to commencement of a main fuel injection event to enable the main fuel injection event at rail pressure (P1) via the rail fuel supply passage (608) only and to enable communication between the accumulator volume (606) and the fuel pressurising arrangement (604),

close the rail control valve (612) after commencement of the main injection event to permit the pressure of the fuel isolated in the pressure boosting arrangement (604) to increase, and

open the fuel shut-off valve (618) before the end of the main injection event to provide an injection of pressurised fuel through the pressurised fuel supply passage (614).

8. A system according to claim 7, wherein said control arrangement is an electronic engine controller.

9. A system according to claim 8, wherein the electronic engine controller is programmed to close the rail control valve (612) and open the fuel shut-off valve (618) at a pre-selected interval to control the injection profile of the injection event.

10. A system according to claim 9, wherein the electronic engine controller is programmed to open the fuel shut-off valve (618) after the fuel pressurising arrangement (604) has pressurised the fuel to a peak pressure.

11. A system according to claim 1, wherein the fuel pressurising arrangement (604) comprises a pumping chamber (626) and a pressurising arrangement (622, 624) for increasing the pressure of fuel in the pumping chamber (626).

12. A system according to claim 11, wherein the pressurising arrangement comprises a cam (622) and a plunger (624), whereby the plunger (624) is driven back and forth within the pumping chamber (626) upon rotation of the cam (622).

13. A system according to claim 12, wherein the cam is a stepped retraction cam (622).

14. A system according to claim 1, wherein the fuel shut-off valve (618) is controlled by a shut-off control valve (630) for controlling hydraulic forces acting on the fuel shut-off valve (618).

15. A system according to claim 14, wherein the shut-off control valve comprises an electronically controlled three-way valve (630).

16. A system according to claim 15, wherein the shut-off control valve (630) is connected in a first position with pressurised fuel from the fuel pressurising arrangement (604) and in a second position with a low pressure reservoir, whereby when in the first position the pressurised fuel is in communication with a shut-off valve control member (628) to prevent opening of the fuel shut-off valve (618) and when in the second position the shut-off valve control member (628) is switched to communicate with the low pressure reservoir to cause the fuel shut-off valve (618) to open.

17. A system according to claim 16, wherein the fuel shut-off valve (618) comprises a shut-off valve control

chamber (633) at least partially surrounding the shut-off valve control member (628), whereby switching between the first position of the shut-off control valve (630), in which the shut-off valve control chamber (633) receives pressurised fuel from the fuel pressurising arrangement (604), to the second position, in which the shut-off valve control chamber (633) receives low pressure fuel from the low pressure reservoir, results in opening of the fuel shut-off valve (618).

18. A fuel injection system for supplying pressurised fuel to a fuel injector (200), the fuel injection system comprising:

an accumulator volume (606) for supplying fuel at rail pressure (P1) to the fuel injector (200) through a rail fuel supply passage (608);

a fuel pressurising arrangement (604) for supplying fuel at a selected pressure (P2) greater than rail pressure (P1) to the fuel injector (200) through a pressurised fuel supply passage (614);

a rail supply junction (610) via which fuel within the accumulator volume (606) is supplied to the fuel pressurising arrangement (604);

a rail control valve (612) located between the rail supply junction (610) and the fuel pressurising arrangement (604) and being operable between an open position in which fuel from the accumulator volume (606) is permitted to flow into the fuel pressurising arrangement (604) for pressurisation, and a closed position in which fuel in the fuel pressurising arrangement (604) is isolated from the fuel within the accumulator volume (606); and

a fuel shut-off valve (618) operable during an injection of fuel from the rail fuel supply passage (608) between a closed position in which fuel is retained within the pressurising arrangement (604) and an open position in which pressurised fuel is supplied to the injector (200) from the pressurising arrangement (604), thereby to provide a boost in the fuel pressure delivered during an injection event.

19. A method for supplying pressurised fuel to a fuel injector (200) of a fuel injection system according to claim 1, the method comprising:

controlling whether fuel is pressurised to the selected pressure (P2) under the control of a rail control valve (612),

commencing an injection event by injecting fuel only from the rail supply passage (608) at rail pressure (P1),

during the injection of fuel at rail pressure (P1), closing the rail control valve (612) to allow fuel within the pressurising arrangement (604) to be pressurised, and

subsequently and during the injection event opening the fuel shut-off valve (618) so as to increase the pressure of the injected fuel to the selected pressure level (P2).

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